U.S. Department of Health and Human Services

HHS Enterprise Information Technology Strategic Planning Program

Functional Requirements for the HHS Strategic IT Performance Management Data Collection, Analysis, and Reporting Tool (PM Data CART)

April 2004

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Revision History

Name	Date	Summary of Changes
OCIO	04/06/04	Initial Version
OCIO	04/12/04	Added Priority II requirement for web portal interface / single log-on

Introduction

The HHS Information Technology (IT) Performance Management (PM) Data Collection, Analysis, and Reporting Tool (CART), also known as HHS IT PM Data CART, will serve as an integral part of the strategic IT performance management process under development by the HHS Office of the Chief Information Officer (OCIO). As described in the *HHS Enterprise IT Strategic Planning Program, IT Performance Management System Blueprint*, dated December 2003, the new strategic IT performance management process will allow the OCIO to track the Department's progress in achieving the goals and objectives outlined in the *HHS Enterprise IT Strategic Plan, FY 2003 – FY 2008*, also dated December 2003. By tracking performance information supporting the IT goals and objectives, the OCIO will be better able to inform management decision making to ensure that the Department achieves its desired results.

The PM Data CART will provide a data collection mechanism for the HHS OCIO to gather IT performance information from sources across the Department. The PM Data CART will also serve as a repository for this performance information, and will conduct analyses of the information in order to produce management reports. The OCIO requires full implementation of this tool by the end of the 2004 fiscal year.

Purpose of Document

This document identifies the functional requirements for the HHS IT PM Data CART. It should be noted that this document outlines the functionality that must be provided by the tool (*what* the tool must do) but it does not address any specific technical solution (*how* it must be done.) The distinction of these two concepts is essential in order to ensure that the business requirements do not become obscured by the offerings of any particular software solution.

Intended Audience

This document is intended for business managers at the HHS OCIO and Operating Division (OPDIV) level, as well as software developers and contractor support who may be involved with the selection and implementation of this tool. Business managers should ensure that the requirements outlined in this document clearly convey their organization's business needs. In addition, these managers should also ensure that the needs of their staff (tool users) are reflected in this document.

Software developers and contract support will find this document essential in planning, selecting, designing, developing, and implementing the PM Data CART. The requirements checklist included in the Appendix section of this document should be especially useful for evaluating potential technical solutions for the PM Data CART.

Part I – Application Overview

The new IT performance management process consists of six phases, as outlined in the *IT Performance Management System Blueprint*. The PM Data CART is integral to the second, third, and fourth phases of this process: Collect Data, Analyze Results, and Report Findings. The PM Data CART will provide the HHS OCIO with a mechanism to collect, store, analyze, and report strategic IT performance management information in the form of IT performance measures, which have been defined by the OCIO as part of the first phase of the strategic IT performance management process. The tool will also contribute to the fifth phase, which relates to management action. Figure 1 below depicts the six phases of the HHS strategic IT performance management process.

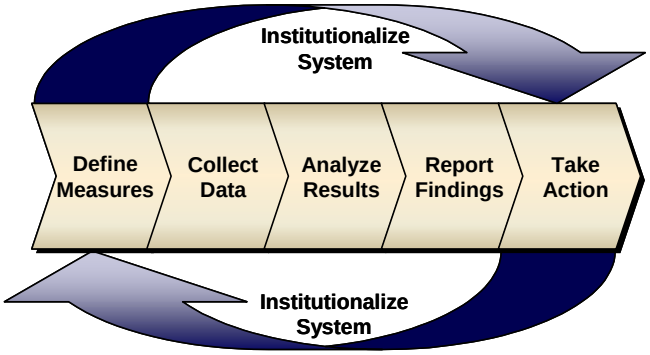

Figure 1: HHS Strategic IT Performance Management Process

The HHS strategic IT performance management process is being developed as part of the Department's efforts to strengthen its IT strategic planning and performance management program. The OCIO has identified strengthening its IT strategic planning program as a priority for the 2003 and 2004 fiscal years. As of this date, the OCIO has already designed a new strategic planning program, added a performance management component to this program, and updated the HHS Enterprise IT Strategic Plan.

Objectives

The PM Data CART will help the Department ensure that it is fulfilling its IT strategic planning goals and objectives. By understanding how well the Department is fulfilling these strategies, the OCIO will be able to direct management attention and resources to those activities that more greatly require them. The PM Data CART will help the Department identify areas of over/under performance, and will help guide the sustaining and corrective actions to be taken. The PM Data CART will thus enable the HHS OCIO to better manage the fulfillment of the IT strategies outlined in the HHS Enterprise IT Strategic Plan.

The objectives of the PM Data CART are threefold. First, the tool must enable the HHS OCIO to quickly, reliably, and consistently gather performance information from OPDIVs, enterprise initiatives, and other data sources. Second, the tool must enable the OCIO to accurately calculate and identify those areas within the Department that are responsible for over/under performance, based on the strategic IT targets set forth by the Department. Finally, the tool must allow OCIO to visualize performance information in a way that is easy to read, understand, and communicate throughout the Department.

Business Process

The PM Data CART will serve as an integral component for the Collect Data, Analyze Results, and Report Findings phases of the IT performance management process. Without such a tool, OCIO staff would have to perform a substantial amount of manual work in order to collect the performance information, develop findings, and report the information to senior leadership. The PM Data CART will not only standardize and facilitate this process, but it will also improve the accuracy and validity of the information produced from the analysis of the raw data, and provide superior reports that will facilitate the communication of this information.

Collect Data Phase

The Collect Data phase consists of a quarterly data call (i.e., data request) to the sources of performance data, mainly the OPDIVs and the enterprise initiatives. While other sources of performance data might be included in the process, these two account for the majority of the performance information to be collected. The performance information collected consists of the data elements (i.e., metrics) required to construct the performance measures defined in the first phase of the process. Figure 2 illustrates this concept.

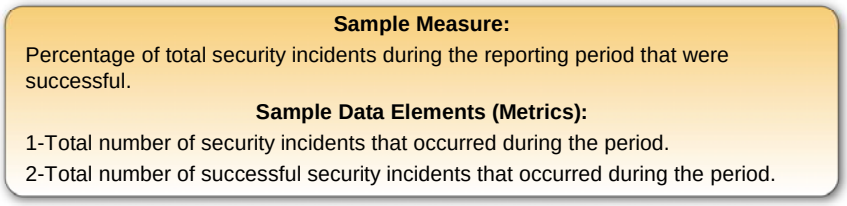

Figure 2: Sample Measure and Metrics

Currently, OCIO performs most of its data calls via emails, phone, fax or mail. PM Data CART will replace these informal collection methods, and provide OCIO the ability to publish online questionnaires, forms, or surveys to be completed by OPDIVs and enterprise initiatives. Collecting this information via electronic questionnaires or surveys will reduce the amount of time required to request and submit this information, and will also help decrease error rates and help ensure that the most accurate data is collected. Published surveys will be available

for completion instantaneously, and submitted surveys will be received by OCIO immediately as well. Automated validation of responses, another advantage of electronic questionnaires, will help reduce the number of missing or incorrect answers submitted to OCIO. Also, the aggregation and storage of responses will be automatic, reducing the amount of time required to process the responses. PM Data CART will not only reduce the amount of resources and time required by OCIO to create, publish, collect, and handle these data request, but will also ease the submission of this information by the respondents. As the HHS OCIO continues to automate the numerous data requests sent to the OPDIVs annually, it will improve its ability to reuse information already collected by other people, groups, or programs within the Office, helping reduce the burden on the OPDIVs and enterprise initiatives who must constantly report this information.

Figure 3 illustrates the "To-Be" data collection process with the PM Data CART. (Please note that the three different priority levels are defined in Part II of this document.)

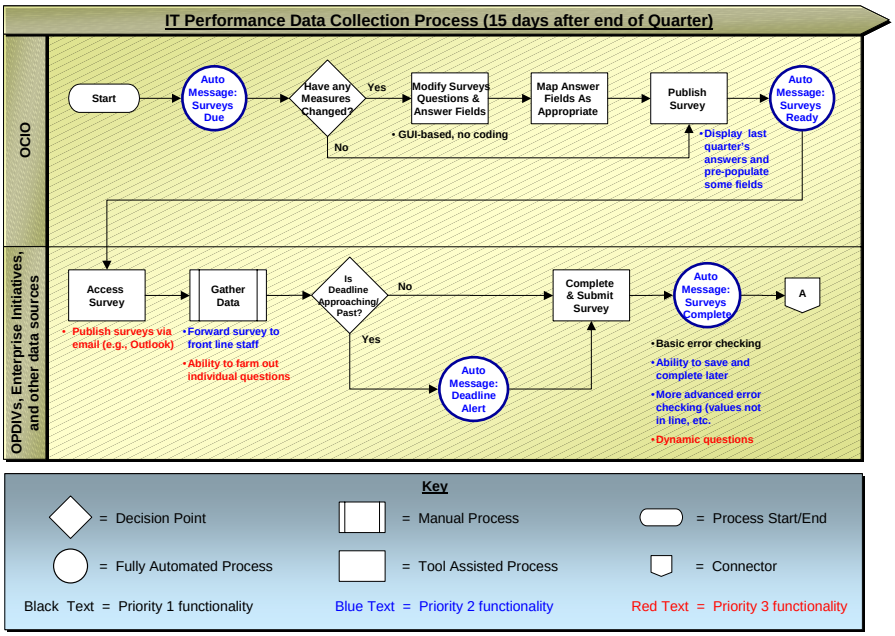

Figure 3: PM Data CART Assisted Data Collection Process

Analyze Results Phase

The Analyze Results phase consists of a series of analyses that must be conducted on the collected data. Today, performance measures collected for budgetary or other reasons must be analyzed manually, with only the help of desktop tools such as Microsoft Excel. As a result, the analysis of this data can be a long and tedious process, and the calculations performed by each group or over time might not be the same as the data might be interpreted differently.

Through the PM Data CART, the analysis of strategic IT performance data will be standardized and automated. Not only will this automation result in greater efficiency and accuracy, but it will also protect the integrity of the process across groups and over time. In addition, the complexity and sophistication of the analyses performed may be increased, as more advanced algorithms can be devised to analyze the data in any way the OCIO sees fit.

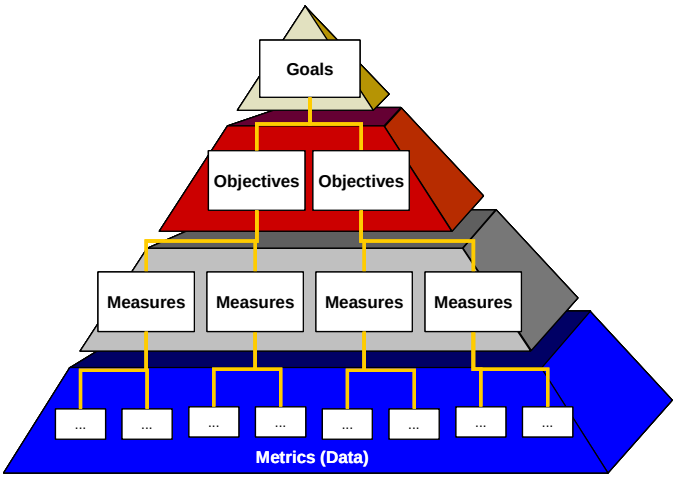

Figure 4: Hierarchy of Strategic Priorities

PM Data CART will analyze the collected performance data according to defined business rules. Some of the basic analyses to be performed by the PM Data CART are the calculation of variances between actual and target performance, as well as the rollup of this information into a Departmental and OPDIV score by goal, objective, and measure. Figure 4 depicts this hierarchy of strategic priorities. Also, the PM Data CART will provide the tool administrator with the ability to easily modify the business rules and calculations used to determine the scoring of measures, objectives, and goals. This functionality will ensure that the tool remains flexible and useful as the strategic priorities of the Department change over time. Finally the PM Data CART will also analyze trends across organizations and over time. Depending on the scope of the first release, the PM Data CART might also be able to predict future problems or variances in performance based on the trends it detects.

Figure 5 illustrates the “To-Be” data analysis process with the PM Data CART:

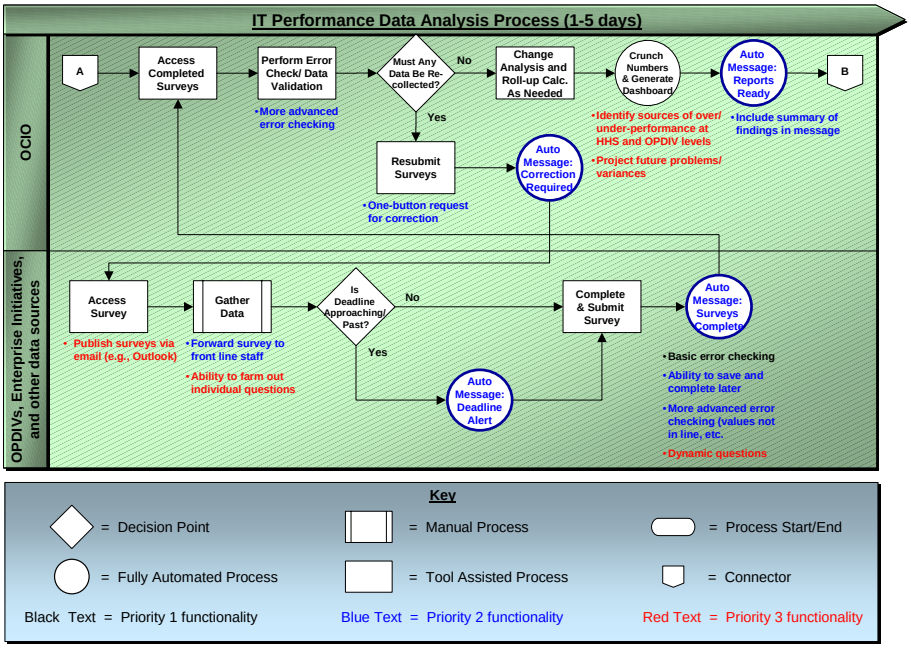

Figure 5: PM Data CART Assisted Data Analysis Process

Report Findings Phase

The Report Finding phase refers to the production of management reports to communicate the findings from the analyses. While HHS employs robust reporting technologies such as Crystal Reports in some areas of the organization, performance information is commonly reported via manually generated reports, using tools such as Microsoft Excel. Reports are static with little visualization of the information presented beyond the use of some graphs.

The PM Data CART will employ two types of reports. First, PM Data CART will provide users with the ability to create reports on "the fly". Users will be able to select the measure, objective, or goal that they want to see, along with the time period and organization(s) that they want included in the report. Furthermore, users will be able to select from a number of simple graphs or table views to display the information.

Second, the PM Data CART will produce a performance dashboard. This dashboard will display the current score or grade achieved by the Department or by an OPDIV for each of the goals, objectives, and measures. In addition, the dashboard will be interactive, allowing users to drill down from one level to the next (e.g., goal, objectives, measures, data). This feature will allow users to easily and visually determine the root causes of any under/over performance.

Figure 6 illustrates the "To-Be" IT performance reporting process with the PM Data CART:

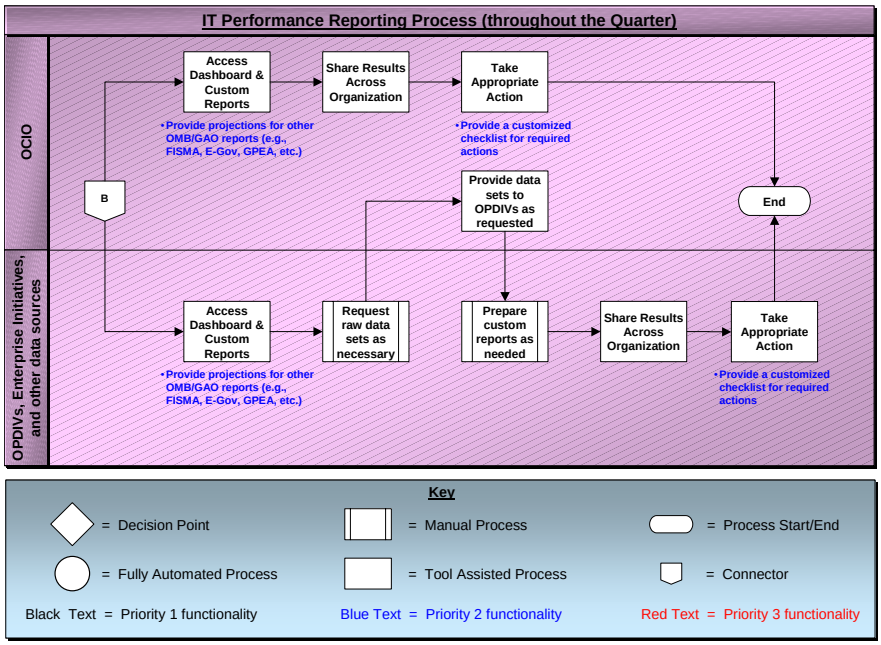

Figure 6: PM Data CART Assisted IT Performance Reporting Process

User Roles

Staff members from the HHS OCIO, OPDIVs, and enterprise initiatives will all use the PM Data CART. The following table contains the users of the PM Data CART, listed by user role:

User Role	Description
Tool Administrator	▶ This user will manage the PM Data CART. Tasks include: survey administration; collection and review of responses; maintenance/update of goals, objectives, measures, and metrics (i.e., survey questions); production of reports; importing and exporting data as required; general maintenance of the tool. ▶ This user will begin and end the quarterly process of data collection, analysis, and reporting.
Questionnaire / Survey Responder	▶ This user will provide the information being requested by the tool administrator. Tasks include reviewing, completing, and submitting the published questionnaires or surveys.
Report Viewer	▶ This user will access the performance dashboard and generate custom reports. Tasks include: accessing and navigating the performance dashboard; generating custom reports using the report generation functionality; downloading/exporting report data as required.

User Role	Description
Data Analyst	▶ This is an indirect user of the system. This user will request data stored in the system from the tool administrator in order to conduct his/her own custom analysis/reports.

Interactions with Other Systems

The initial release of the PM Data CART will not require any direct interfaces to other systems or applications. All data stored in this system will either be submitted via surveys, or manually imported by the tool administrator.

Future releases of the PM Data CART may require interfaces to other systems that store performance data. One example of a potential future interface would be a connection to the Information Security Data Manager (ISDM) system owned by the Secure One HHS enterprise initiative. This data collection system stores a large amount of security-related performance information that the PM Data CART tool requires. Transfer of data between these systems can be facilitated via a future link or interface between these systems.

Administration and Maintenance

The PM Data CART will be administered and maintained by the HHS OCIO.

PM Data CART Rollout

The PM Data CART will be developed and rolled out in two phases. The first phase, scheduled for completion by June 30, 2004, is the pilot of the PM Data CART and will consist of the data collection, analysis, and reporting modules. The functionality developed at this phase will be piloted by using the tool to assist in the third quarter's performance measures data collection, analysis, and reporting.

The second phase, scheduled for completion by September 30, 2004, involves undertaking the necessary changes and adjustments to refine the tool and prepare it for the fourth quarter performance assessment.

Part II – Functional Requirements

As stated above, the three main functional areas or modules for the tool will be the data collection, data analysis, and reporting modules. The functionality required from each module is detailed in this section.

Statement of Functionality

The HHS Performance Measures Data Collection, Analysis, and Reporting Tool (PM Data CART) will provide a mechanism for the HHS OCIO to (1) easily collect strategic IT performance data from various sources across the Department, (2) automatically translate this data into performance information that identifies sources of under/over performance as well as trends in performance, and (3) provide a visual representation of these findings via custom reports and electronic dashboards.

Functional Requirements

The following sections describe the functional requirements for the PM Data CART. Priority I requirements represent base functionality that is required to support the strategic IT performance management process. Priority II requirements represent additional features that are desired, but not mandatory for the strategic IT performance management process to function. Finally, Priority III requirements represent "wish list" requirements that are also optional.

Priority	Data Collection Functional Requirements
I	1. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to create, edit, and customize electronic questionnaires, forms, or surveys that, on a quarterly basis, guide users through the exact data elements that must be submitted for their specific area, group, or function.
I	2. Provide an easy-to-use mechanism for the tool administrator to publish (make accessible to others) the questionnaires, forms, or surveys, and to define the time period the questionnaires, forms, or surveys will remain available to be completed.
I	3. Provide access to the questionnaires, forms, or surveys via the web from any remote location with access to the HHS intranet.
I	4. Enforce any validation rules and provide an alert mechanism for missing data, incorrect data formats, or other error conditions.

I	5. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to review the results of the questionnaires, forms, or surveys.
I	6. Provide an easy-to-use mechanism for the tool administrator to return incomplete or erroneous questionnaires, forms, or surveys back to the users for correction and resubmission.
I	7. Provide a mechanism for users to access additional information for terms or questions contained within the questionnaires, forms, or surveys (i.e., “help links”)
II	8. Provide the ability for users to save incomplete surveys and to edit previous submissions up to the predetermined cut-off date for each quarter.
II	9. Display last quarter’s responses for each question on the questionnaire, form, or survey.
II	10. Provide the ability to pre-populate answer fields with last quarter’s responses.
II	11. Transmit system-generated email messages to the tool administrator and users when certain conditions are met. Conditions include: Deadline to publish surveys approaching, surveys available for completion, survey deadline approaching or past, all surveys completed and ready for review, reports ready for review, and other conditions when administrator or user intervention might be required.
II	12. Provide a mechanism for users to easily forward their questionnaires, forms, or surveys to other staff members within their organizations.
II	13. Provide automated error checking for responses not in line with prior submissions, or which seem incorrect. The tool should provide a warning message for users to double-check their responses, yet it should allow users to submit their responses as entered.
III	14. Provide a mechanism to publish, complete, and submit the questionnaires, forms, or surveys via email.
III	15. Provide a mechanism for users to easily forward individual questions to other users within their organizations, who could in turn provide their answers directly into the questionnaire, form, or survey (i.e., partition the surveys).
III	16. Provide the ability to display a dynamic question stream based on user responses (i.e., subsequent questions change according to the responses given to prior questions.)

Priority	Data Analysis Functional Requirements
I	17. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to map survey questions to specific performance measures. This must include the ability for the tool administrator to define simple calculations to derive the value of a measure from multiple questions (e.g., calculate percentages, calculate averages, etc.)
I	18. Automatically calculate values for performance measures, based on the calculations defined by the tool administrator. These values must be calculated at both the OPDIV and Department level.
I	19. Automatically calculate variances between current values and targets for each performance measure, at both the OPDIV and Department level.
I	20. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to map performance measures to strategic objectives. This must include the ability to define simple rules to derive the score of an objective from the scores of its mapped performance measures.
I	21. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to map strategic objectives to strategic goals. This must include the ability to define simple rules to derive a goal's score from the scores of its mapped objectives.
I	22. Automatically calculate both objective and goal scores at the OPDIV and Department level, based on the rules defined by the tool administrator.
I	23. Store historical IT performance data for multiple time periods.
I	24. Provide a mechanism to easily export collected performance data (into Excel or another database format) for custom analysis.
II	25. Automatically analyze pre-programmed trends or patterns across OPDIVs and time for each performance measure.
II	26. Project the results of upcoming management reports (such as FISMA, E-Gov, and GPEA reports) based on the performance information collected by the tool, to include the score or grade that would be achieved on these reports.
III	27. Automatically identify sources of over/under performance for each goal and objective. Sources include the specific measures and OPDIVs that had the largest impact on a goal/objective score.
III	28. Project future variances in expected versus targeted performance and other problem conditions based on trends in the collected performance data.

Priority	Reporting Functional Requirements
I	29. Provide an easy-to-use graphical interface for users to generate custom reports “on the fly”. This includes the ability to select the measure to be reported, the time period to be reported on, the organizations to include in the report (e.g., OPDIVs) and the type of graphical representation to display (e.g., graph type, table view, etc.)
I	30. Provide a performance dashboard to visualize performance information at both the OPDIV and Department levels. This interactive interface must allow users to drill down from the goal level into the objective, measure, and data level as appropriate.
I	31. Provide a view for users to review the details of each individual measure. This view should include the associated goal and objective for the measure, as well as the measure’s definition, rationale, data source, formula, target and baseline values, definitions for result categories (i.e., red, yellow, green), as well as the actions to be taken when each result category occurs.
II	32. Provide a mechanism to easily export generated custom reports into Excel or another text format.
Priority	**Other Requirements**
I	33. Provide a robust authentication process for users to access the tool via the HHS Intranet.
I	34. Provide user-defined access rights to the data and reports contained within the tool (i.e., access to OPDIV information restricted by user login.)
I	35. Provide easy-to-use graphical interfaces for the tool administrator to complete the administration and maintenance tasks required for the tool, including the maintenance of user accounts, backup of data, and update of system messages (as appropriate).
II	36. Provide a mechanism to access the user interfaces (e.g., questionnaires/forms/surveys, reports, and performance dashboards) via the Department’s Web Portal using the portal’s single log-on (authentication).

Part III – Appendix

PM Data CART Functional Requirements Checklist

PM Data CART Functional Requirements Checklist

Priority	Data Collection Functional Requirements	System A	System B	System C
I	1. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to create, edit, and customize electronic questionnaires, forms, or surveys that, on a quarterly basis, guide users through the exact data elements that must be submitted for their specific area, group, or function.			
I	2. Provide an easy-to-use mechanism for the tool administrator to publish (make accessible to others) the questionnaires, forms, or surveys, and to define the time period the questionnaires, forms, or surveys will remain available to be completed.			
I	3. Provide access to the questionnaires, forms, or surveys via the web from any remote location with access to the HHS intranet.			
I	4. Enforce any validation rules and provide an alert mechanism for missing data, incorrect data formats, or other error conditions.			
I	5. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to review the results of the questionnaires, forms, or surveys.			
I	6. Provide an easy-to-use mechanism for the tool administrator to return incomplete or erroneous questionnaires, forms, or surveys back to the users for correction and resubmission.			
I	7. Provide a mechanism for users to access additional information for terms or questions contained within the questionnaires, forms, or surveys (i.e., ”help links”)			
II	8. Provide the ability for users to save incomplete surveys and to edit previous submissions up to the predetermined cut-off date for each quarter.			
II	9. Display last quarter’s responses for each question on the questionnaire, form, or survey.			
II	10. Provide the ability to pre-populate answer fields with last quarter’s responses.			
II	11. Transmit system-generated email messages to the tool administrator and users when certain conditions are met. Conditions include: Deadline to publish surveys approaching, surveys available for completion, survey deadline approaching or past, all surveys completed and ready for review, reports ready for review, and other conditions when administrator or user intervention might be required.			
II	12. Provide a mechanism for users to easily forward their questionnaires, forms, or surveys to other staff members within their organizations.			
II	13. Provide automated error checking for responses not in line with prior submissions, or which seem incorrect. The tool should provide a warning message for users to double-check their responses, yet it should allow users to submit their responses as entered.			

III	14. Provide a mechanism to publish, complete, and submit the questionnaires, forms, or surveys via email.			
III	15. Provide a mechanism for users to easily forward individual questions to other users within their organizations, who could in turn provide their answers directly into the questionnaire, form, or survey (i.e., partition the surveys).			
III	16. Provide the ability to display a dynamic question stream based on user responses (i.e., subsequent questions change according to the responses given to prior questions.)			
Priority	**Data Analysis Functional Requirements**	**System A**	**System B**	**System C**
I	17. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to map survey questions to specific performance measures. This must include the ability for the tool administrator to define simple calculations to derive the value of a measure from multiple questions (e.g., calculate percentages, calculate averages, etc.)			
I	18. Automatically calculate values for performance measures, based on the calculations defined by the tool administrator. These values must be calculated at both the OPDIV and Department level.			
I	19. Automatically calculate variances between current values and targets for each performance measure, at both the OPDIV and Department level.			
I	20. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to map performance measures to strategic objectives. This must include the ability to define simple rules to derive the score of an objective from the scores of its mapped performance measures.			
I	21. Provide an intuitive, easy-to-use, graphical interface for the tool administrator to map strategic objectives to strategic goals. This must include the ability to define simple rules to derive a goal's score from the scores of its mapped objectives.			
I	22. Automatically calculate both objective and goal scores at the OPDIV and Department level, based on the rules defined by the tool administrator.			
I	23. Store historical IT performance data for multiple time periods.			
I	24. Provide a mechanism to easily export collected performance data (into Excel or another database format) for custom analysis.			
II	25. Automatically analyze pre-programmed trends or patterns across OPDIVs and time for each performance measure.			
II	26. Project the results of upcoming management reports (such as FISMA, E-Gov, and GPEA reports) based on the performance information collected by the tool, to include the score or grade that would be achieved on these reports.			
III	27. Automatically identify sources of over/under performance for each goal and objective. Sources include the specific measures and OPDIVs that had the largest impact on a goal/objective score.			

III	28. Project future variances in expected versus targeted performance and other problem conditions based on trends in the collected performance data.			
Priority	**Reporting Functional Requirements**	**System A**	**System B**	**System C**
I	29. Provide an easy-to-use graphical interface for users to generate custom reports "on the fly". This includes the ability to select the measure to be reported, the time period to be reported on, the organizations to include in the report (e.g., OPDIVs) and the type of graphical representation to display (e.g., graph type, table view, etc.)			
I	30. Provide a performance dashboard to visualize performance information at both the OPDIV and Department levels. This interactive interface must allow users to drill down from the goal level into the objective, measure, and data level as appropriate.			
I	31. Provide a view for users to review the details of each individual measure. This view should include the associated goal and objective for the measure, as well as the measure's definition, rationale, data source, formula, target and baseline values, definitions for result categories (i.e., red, yellow, green), as well as the actions to be taken when each result category occurs.			
II	32. Provide a mechanism to easily export generated custom reports into Excel or another text format.			
Priority	**Other Requirements**	**System A**	**System B**	**System C**
I	33. Provide a robust authentication process for users to access the tool via the HHS Intranet.			
I	34. Provide user-defined access rights to the data and reports contained within the tool (i.e., access to OPDIV information restricted by user login.)			
I	35. Provide easy-to-use graphical interfaces for the tool administrator to complete the administration and maintenance tasks required for the tool, including the maintenance of user accounts, backup of data, and update of system messages (as appropriate).			
II	36. Provide a mechanism to access the user interfaces (e.g., questionnaires/forms/surveys, reports, and performance dashboards) via the Department's Web Portal using the portal's single log-on (authentication).			
Priority	**Other Criteria for Solution Evaluation**	**System A**	**System B**	**System C**
N/A	► Cost to implement solution.			
N/A	► Time required to implement solution.			
N/A	► Strategic fit with other OCIO priorities/initiatives.			
N/A	► Ease of certification and accreditation of solution.			